

radiated by the spacecraft under test, and the remainder will be removed by the diffusion pumps of the vacuum system.

A solid niobium ball, less than two inches in diameter and weighing $3\frac{1}{2}$ ounces, is being fabricated to within 10^{-4} inches of perfect sphericity at the General Electric Laboratories in Schenectady, N. Y. To be used as a critical part of an inertial guidance system to direct either spacecraft or earthbound vehicles, the sphere will be suspended in a vacuum by means of a magnetic field at superconducting temperatures, thus providing a near-frictionless gyroscope. Once set in motion, it is expected to rotate freely for months, and possibly for years.

Accelerators

Responsibility for accelerator development carried out by the United Kingdom Atomic Energy Authority, which has in the past been centered in the Accelerator Division of the Atomic Energy Research Establishment at Harwell, has been transferred to the neighboring Rutherford High-Energy Laboratory of Britain's National Institute for Research in Nuclear Science. The Institute was created in 1957 as an independent agency for constructing and operating costly high-energy research equipment for the use of nuclear scientists from British universities.

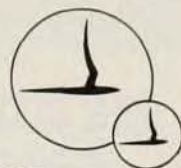
The majority of the AERE staff members engaged in accelerator design and development have moved to the Institute's Rutherford Laboratory, and L. B. Mullett, formerly head of the AERE Accelerator Division, has joined the Rutherford Laboratory as assistant director for accelerator and applied physics. NIMROD, the 7-Bev proton synchrotron which is nearing completion in the Rutherford Laboratory, was the National Institute's first project, while the AERE's 50-Mev proton linear accelerator was transferred to the Institute after being commissioned and is now available to universities for nuclear physics research.

Berkeley Radiotelescope

A new, ten-foot radiotelescope designed for observations at much shorter wavelengths than those previously in operation has been installed on the roof of Cory Hall on the University of California campus at Berkeley. Donated by the Office of Naval Research and constructed at the Norfolk Naval Shipyard, Portsmouth, Va., the new antenna will be operated (with ONR support) under the supervision of Samuel Silver, director of the University's Space Sciences Laboratory, and William J. Welch, assistant professor of electrical engineering.

The ten-foot dish will observe signals in the 4-8-millimeter range, in contrast to the 10-20-centimeter waves favored by the larger telescopes. Its beam width (between one and two tenths of a degree, attainable in the 10-20-cm region only by a dish several

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hundred feet in diameter) will permit the study of solar and lunar radiations according to their regions of origin, since those bodies subtend an angle of about one-half degree. The instrument will be used in studies of variations in activity of different portions of the sun in relation to sun spots and flares, the polarization of solar radiation, and the question of the existence of volcanic activity on the moon. Observations of planetary and galactic radiation are also planned.

Time Signal Adjustment

On August 1, at 0000 Universal Time, an advance of 50 milliseconds was effected in the phase of the time signals broadcast by five standard frequency broadcasting stations in various parts of the world (GBR and MSF at Rugby, England; NBA, Canal Zone; WWV, Beltsville, Md.; and WWVH, Hawaii). Such adjustments are made whenever necessary in order to maintain the broadcast signals, which are based on atomic frequency standards, within 50 milliseconds of Universal Time. Variations of the time scale reflect a small, but perceptible fluctuation in the speed of the earth's rotation.

Coordination helps provide a more uniform system of time and frequency transmissions throughout the world, needed in the solution of many scientific and technical problems in such fields as radio communications, geodesy, and the tracking of artificial satellites.

Participants in the coordination project were the Royal Greenwich Observatory, the National Physical Laboratory, and the Post Office Engineering Department in the United Kingdom; and, in the United States, the US Naval Observatory, the Naval Research Laboratory, and the National Bureau of Standards. This program followed previous cooperative efforts of the same agencies to achieve uniformity and simplification in procedures.

AFOSR Research Grants

During the fiscal year ending June 30, the Air Force Office of Scientific Research made grant and contract awards amounting to more than \$21.5 million. Of the 460 grants, new contracts, and contract renewals involved, 357 went to 110 universities and colleges (92 in the US, 5 in Canada, 11 in South America, and one each in Australia and Puerto Rico). The remaining 103 were received by nonprofit research institutions and industrial laboratories.

AFOSR is one of four basic research organizations of the Air Force's Office of Aerospace Research and is primarily charged with the support of basic research in the Western Hemisphere and other countries not served by OAR's European Office in Brussels. All AFOSR grants and contracts are based on unsolicited research proposals, which are evaluated on the basis of originality, significance to science, competence of the investigator, and the relevance of the proposed research to Air Force needs.